## REMARKS

Entry of the foregoing, reexamination and reconsideration of the subject application are respectfully requested in light of the amendments above and the comments which follow.

As correctly noted in the Office Action Summary, claims 1-18 were pending. By the present response, claims 1, 4-11, 15 and 16 have been amended and claims 19 and 20 have been added. Thus, upon entry of the present response, claims 1-20 remain pending and await further consideration on the merits.

Support for the foregoing amendments can be found, for example, in at least the following locations in the original disclosure: paragraphs [0028] and [0031].

### *CLAIM REJECTIONS UNDER 35 U.S.C. §112*

Claims 1-15 stand rejected under 35 U.S.C. §112, second paragraph on the grounds set forth in paragraph 2 of the Official Action.

By the present response, applicants have amended the noted claims in a manner which addresses the above-noted rejection including addressing the typographic errors contained therein. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

### *CLAIM REJECTIONS UNDER 35 U.S.C. §103*

Claims 1-9 and 11-18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 2001/0005550 A1 to Bengtsson et al (hereafter "*Bengtsson et al '550*") and U.S. Patent No. 4,051,277 to Wilkinson et al.

(hereafter "*Wilkinson et al.*) on the grounds set forth in paragraph 5 of the Official Action.

Claim 10 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Bengtsson et al. '550* and *Wilkinson et al.* as applied to claim 8 above, and further in view of EP 0590263 A2 to Kotani et al. (hereafter "*Kotani et al.*") on the grounds set forth in paragraph 6 of the Official Action.

Claims 1-9 and 11-18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over WO 98/09812 to Berlin et al. (hereafter "*Berlin et al. '812*") in view of *Bengtsson et al. '550* and *Wilkinson et al.* on the grounds set forth in paragraph 7 of the Official Action.

Claim 10 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Berlin et al. '812*, *Bengtsson et al. '550*, and *Wilkinson et al.* as applied to claim 8 above, and further in view of *Kotani et al.* on the grounds set forth in paragraph 8 of the Official Action.

Claims 1-9 and 1-18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Berlin et al.* '812 in view of WO 99/46121 to Bengtsson et al (hereafter "*Bengtsson et al '121*") and *Wilkinson et al.* on the grounds set forth in paragraph 9 of the Official Action.

Claim 10 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Berlin et al. '812* in view of *Bengtsson et al. '121* and *Wilkinson et al.* as applied to claim 8 above, and further in view of *Kotani et al.* on the grounds set forth in paragraph 10 of the Official Action.

Claims 1-9 and 11-18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Berlin et al. '812* in view of WO 97/22536 to Berlin et al. (hereafter

"*Berlin et al. '536*"), and *Wilkinson et al.* on the grounds set forth in paragraph 11 of the Official Action.

Claim 10 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Berlin et al. '812*, *Berlin et al. '536*, and *Wilkinson et al.* as applied to claim 8 above, and further in view of *Kotani et al.* on the grounds set forth in paragraph 12 of the Official Action.

As noted and discussed below, these rejections have not established a prima facie case of obviousness and should be withdrawn.

The present invention is generally directed to the production of laminated packaging material comprising a core layer of paper or paperboard and a barrier layer applied on one side of the core layer. Conventionally, laminated packaging material consisting solely of paper or paperboard and liquid-type plastic lacks sufficient barrier properties vis-à-vis gases, in particular oxygen gas. Aluminum foil has traditionally been employed as a barrier layer. Polyvinyl alcohol has also be utilized. See, for example, paragraphs [0006] and [0007]. However, polyvinyl alcohol has shown some disadvantages in practice. See, for example, paragraphs [0008]-[0013].

Accordingly, the present application discloses a method of producing a laminated packaging material for liquid food packaging in which coating the liquid gas barrier composition onto the core layer in connection with the lamination of the packaging material is avoided. Thus, excessive water absorption in the core layer is eliminated and the resulting crack formation when drying the coated core layer is also minimized.

To achieve the improved production method, a liquid barrier composition including a dispersion or solution of a polymer is applied as a barrier layer on at least one side of a carrier layer and is dried during heating for driving off the dispersant or solvent at a first drying temperature in a first step. The carrier layer with the applied, dried barrier layer is then combined and permanently united with one side of a core layer in a second step. Thereafter, the dried barrier layer is cured by heating to above a second temperature. The second temperature is higher than the first temperature.

Applicants' specification discloses several example advantages to the disclosed method. First, the curing of the barrier layer in a step after laminating allows less heat to be used. Secondly, the lower heat requirement (and the insulating effect of the paperboard layer) allows for the use of heat sensitive plastics as the carrier layer when curing below specified temperatures.

The above-noted features and advantages are generally embodied in applicants' claims. Independent claim 1, the only independent claim at issue here, recites that a method of producing a laminated packaging material for liquid food packaging comprises, *inter alia*, a core layer of paper or paperboard in a gas layer barrier applied on one side of the core layer. A liquid barrier composition including a dispersion or solution of a polymer is applied as the barrier layer on at least one side of a carrier layer and is dried during heating for driving off liquid at a first drying temperature in a first step. The carrier layer with the applied, dried barrier layer is combined and permanently united with one side of the core layer in a second step. Whereafter, the dried barrier layer is cured by heating to above a second temperature being higher than the first temperature in a third step.

The rejection of applicants' claims as outlined in paragraphs 5-12 of the Official Action are improper as an obviousness rejection because each of the rejections has failed to establish a *prima facie* case of obviousness. As outlined in M.P.E.P. §§2143-2143.03, there are three basic criteria to establish a *prima facie* case of obviousness. First, there must be a suggestion or motivation to modify the reference or to combine the teachings. Second, there must be a reasonable expectation of success for the proposed modification or combination. Third, the references must teach or suggest all of the claim limitations. For each of the rejections outlined in the Official Action, at least one of the above three criteria is absent. Accordingly, the rejection is improper and should be withdrawn.

For example, the *Bengtsson et al.* references (both *Bengtsson et al. '550* and *'121,* which will be discussed together herein), clearly fail to disclose, teach, or suggest a step in the production of a laminate of curing after lamination as provided for in applicants' independent claim 1. The *Bengtsson et al.* references further disclose laminating a pre-made gas barrier layer to a core layer in the same manner as an aluminum foil gas barrier layer to a core layer. Thus, there is no disclosure in these references as to a method where the dispersion or solution of a polymer is applied as the barrier layer on at least one side of a carrier layer and dried during heating in a first step, combining and permanently uniting the dried barrier layer on one side of a core layer in a second step, and curing by heating to a second temperature higher than the first temperature in a third step.

Further, applicants have disclosed an advantage over that disclosed in *Bengtsson et al.* references. Namely, the advantage of reducing the risk of cracking while drying during the subsequent drying step and further the aqueous dispersion

coating step does not take place in the actual lamination line which would lower the speed of the lamination. See, e.g., page 9, lines 3-21 of *Bengtsson et al. '121*.

The cited references to *Berlin et al.* (both *Berlin et al. '812* and *'536,* which will be discussed together herein), clearly fail to disclose, teach, or suggest a step in the production of a laminate of curing after lamination as provided for in applicants' independent claim 1. Further, these references do not disclose the use of a thin paper layer as a carrier layer. Accordingly, this reference does not provide any further grounds for a rejection beyond that already discussed above with respect to the *Bengtsson et al.* references. Accordingly, this reference in combination as proposed by the Examiner in the Official Action also does not establish a *prima facie* case of obviousness for at least the same reasons as the *Bengtsson et al.* references do not establish a prima facie case of obviousness.

Thus, both the *Bengtsson et al.* references and the *Berlin et al.* references are deficient with respect to all the elements of applicants' claimed method. The Examiner has thus relied on secondary references including *Wilkinson et al.* and *Kotani et al.* However, neither of these secondary references and the resulting proposed combinations establish a prima facie case of obviousness as required by M.P.E.P. § 2143.

*Wilkinson et al.* relates to thermal setting (phenol-formaldehyde type) resins for the purpose of making a corrugated laminated paperboard carton more moisture and water resistant for chilled transport of fresh fruit. However, the moisture barrier is not applied to the outer sides of the paper layers, but instead to the interior sides of the three layers. In other words, two thin outer paper layers and both sides of an intermediate corrugated layer.

*Wilkinson et al.* does not apply to a liquid type and gas barrier type packaging for liquid food. At most, *Wilkinson et al.* discloses cartons that are required to withstand melting ice and the like, and do not disclose a gas barrier as present in applicants' laminated packaging material for liquid food packaging. Indeed, *Wilkinson et al.* fails to disclose a gas barrier at all. Accordingly, one of ordinary skill in the art would not have referred to the *Wilkinson et al.* patent disclosing corrugated paperboard laminate when seeking to address the technology of laminated packaging material for liquid food packaging. For example, nothing disclosed in the *Wilkinson et al.* reference discloses, suggests, or teaches one of ordinary skill in the art that less heat energy may be required by curing after lamination nor is there any disclosure, suggestion, or teaching that a heat sensitive plastic, for example, may be used by employing the *Wilkinson et al.* method.

Further, one of ordinary skill in the art contemplating the disclosure in *Wilkinson et al.* would not refer to this disclosure when confronted with the disclosure in *Bengtsson et al. '550* and *Bengtsson et al. '121* as they apply to different technological fields. For example, the corrugated paperboard laminate layers of *Wilkinson et al.* are actual structural parts of the corrugated paperboard laminate and not simply a barrier layer

From the above, applicants respectfully assert that the combination as proposed of the *Bengtsson et al.* references and *Wilkinson et al.* fails to support an obviousness rejection because 1) the references do not teach or suggest all of the claim limitations and 2) there is no suggestion or motivation to modify the reference or to combine the teachings. M.P.E.P. §§2143-2143.03. Accordingly, a *prima facie*

case of obviousness has not been established and withdrawal of the rejection is respectfully requested.

Finally, reliance upon the disclosure in *Kotani et al.* does not contribute to overcoming the above-noted deficiencies in the other cited references. Specifically, the *Kotani et al.* reference is only relied upon to show the commonality of using an inorganic laminar compound than a polymer composition and contains no disclosure, suggestion, or teaching to employ a carrier layer for a gas barrier composition and specifically to employ a method in which the drying lamination and heat treatment steps are as presently ordered in applicants' independent claim. Accordingly, the *Kotani et al.* reference cannot be a basis for curing the above-noted defects in the primary reference and rejections relying upon *Kotani et al.* still do not establish a *prima facie* case of obviousness with respect to applicants' independent claims.

From the above discussion, applicants respectfully assert that none of the references cited by the Examiner either alone or in combination disclose, teach, or suggest applicants' independent claimed method of producing a laminated packaging material for liquid food packaging. Specifically, applicants note that none of the proposed combinations meet the criteria of a *prima facie* case either because one of ordinary skill in the art would not have been motivated to combine the references as suggested by the Examiner or the combination of the references does not teach or suggest all the claim limitations. Withdrawal of the rejections is respectfully requested.

***CONCLUSION***

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

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